

CLAIMS

What is claimed is:

1. In driveline for an agricultural irrigation system, said driveline comprising:
 - A. A drive gear motor;
 - 5 B. A ball ramp brake; and
 - C. A gearbox coupled to said ball ramp brake.
2. The driveline of claim 1, wherein the ball ramp brake is disposed between drive gear motor and gearbox.
3. The driveline of claim 1, wherein said gearbox comprises a high efficiency gearset.
- 10 4. The driveline of claim 1, further comprising an enclosure enclosing said brake.
5. The driveline of claim 4, wherein a lubricant is disposed within said enclosure.
6. The driveline of claim 1, further comprising a wheel hub engaged by a wheel drive gearbox and a drive shaft coupled to said gearbox at a first end of said drive shaft and coupled to said wheel drive gearbox at a second end of said drive shaft.
- 15 7. The driveline of claim 1, wherein said ball ramp brake comprises a motor drive shaft having a motor drive plate axially aligned therewith, a brake drive shaft having a brake drive plate axially aligned therewith, a first ball ramp plate axially disposed between said brake plate and said motor plate so as to be parallel therewith, a groove formed within at least one of said plates and a ball disposed within said groove.
- 20 8. The driveline of claim 7, wherein said ball ramp brake further comprises a second ball ramp plate axially disposed between said brake plate and said motor plate so as to be parallel therewith and a biasing element disposed between said first and second ball ramp plates so as to urge said first and second ball ramp plates away from one another.

9. The driveline of claim 8, wherein said first ball ramp plate is adjacent said brake drive plate and said second ball ramp plate is adjacent said motor drive plate.

10. The driveline of claim 9, wherein a groove is defined in at least one of said first ball ramp plate and brake drive plate and at least one of said second ball ramp plate and motor drive plate, wherein a ball is disposed in each of said grooves.

11. The driveline of claim 7, wherein said groove is defined by a first end and a second end and includes a groove surface tapered from said first end to said second end.

12. The driveline of claim 7, wherein said groove is defined by a first end, a second end and a mid-portion, and includes a groove surface tapered between said mid-portion and said first end.

13. The driveline of claim 11, wherein said taper is defined by a taper depth and said taper depth increases from said first end to said second end.

14. The driveline of claim 12, wherein said taper is defined by a taper depth and said taper depth increases from said first end to said mid-portion.

15. The driveline of claim 12, wherein said taper is defined by a taper depth and said taper depth decreases from said first end to said mid-portion.

16. The driveline of claim 12, wherein said taper is defined by a taper depth and said taper depth increases from said first end to said mid-portion and thereafter said taper depth decreases from said mid-portion to said second end.

17. The driveline of claim 9, wherein at least one of said opposing sets of plates includes a groove the surface of each opposing plate.

18. The driveline of claim 3, wherein said high efficiency gearset comprises an involute gear.

19. The driveline of claim 3, wherein said high efficiency gearset comprises a planetary gear.

20. The driveline of claim 3, wherein said high efficiency gearset comprises a right angle gear.

21. The driveline of claim 3, wherein said high efficiency gearset comprises a hypoid gear

22. The driveline of claim 3, wherein said high efficiency gearset comprises a planetary gear and a hypoid gear.

23. The driveline of claim 5, wherein said lubricant substantially fills said enclosure.

24. The driveline of claim 4, wherein said enclosure is sealed.

25. The driveline of claim 4, further comprising an enclosure around the gearbox.

26. The system of claim 4, wherein said enclosure encloses the gearbox and the ball ramp brake.

27. In driveline for an agricultural irrigation system, said driveline comprising:

A. a drive gear motor;

B. a ball ramp brake;

C. a first gearbox coupled to said ball ramp brake; and

D. an enclosure enclosing said brake,

E. said enclosure containing a lubricant disposed within said enclosure.

28. The driveline of claim 27, further comprising

A. a wheel drive gearbox;

B. a wheel hub engaged by the wheel drive; and

- C. a drive shaft coupled to said first gearbox at a first end of said drive shaft and coupled to said wheel drive gearbox at a second end of said drive shaft.
29. The driveline of claim 27 wherein the ball ramp brake is bi-directional.
30. The driveline of claim 27 wherein the first gearbox is a high efficiency gearbox.